Finance, Revenue and Bonding Committee
March 13, 2014

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House Bill No. 5466: AAC the Department of Revenue Services' Procedures for Background Checks for Job Applicants, Applicability of the Estate Tax and Taxation of Motor Fuel in Gaseous Form

Testimony Submitted by:

Lee Grannis – Coordinator Greater New Haven Clean Cities Coalition, Inc.

Senator Fonfara, Representative Widlitz, Senator Frantz, Representative Williams and members of the Finance, Revenue and Bonding Committee, my name is Lee Grannis and I am the Coordinator of the Greater New Haven Clean Cities Coalition located at 61 Rolling Green Road, Bethany, Connecticut 06524.

I am here today to testify in strong **support** of a proposed bill before your Committee, House Bill No. 5466, entitled "An Act Concerning the Department of Revenue Services' Procedures for Background Checks for Job Applicants, Applicability of the Estate Tax and Taxation of Motor Fuel in Gaseous Form." Specifically, I offer my support for Section 3 of the proposed bill which addresses gaseous fuels tax computation.

Clean Cities is a US Dept. of Energy Program that supports the deployment of alternative fuel vehicles and their associated fuels as listed in the federal Energy Policy Act of 1992 and subsequent updates of the policy. The program's first priority is the reduced use of foreign petroleum and the related harmful mobile source emission reductions. My coalition is one of four in Connecticut and part of nearly 100 coalition's nationwide along with 18,000 stakeholders. Clean Cities is an alternative fuel neutral organization.

I am here to request parity related to how gaseous fuels are taxed compared to traditional fuels. The disparity lies in the energy values of gaseous fuels as well as in the liquid fuels such as liquefied natural gas (LNG) and propane. In other words all gallons are not the same, and in the case of CNG (Compressed Natural Gas) it is a gas not a liquid. Today we are seeing compressed natural gas, liquefied natural gas and propane fueling stations springing up throughout the state and new alternative fuel fleets being deployed. In the case of CNG, it is a replacement for gasoline, as is propane in most cases. Liquefied natural gas is a replacement for diesel used mostly in Class 7 or Class 8 large over the road vehicles. In the case of all these alternative transportation fuels, they have significantly less energy contents in their respective gallons or in the case of natural gas, pounds. We need to correctly measure and tax all the alternative fuels in a gasoline or diesel gallon equivalent especially to reduce confusion for the public.

The current Connecticut motor fuels tax calculations are **not** in accordance with federal transportation energy conversion tables, and with Section 3 of House Bill 5466 we see an excellent start in correcting the over taxation of gaseous fuels as well as all the alternative

transportation fuels. Our aim, as many here are testifying, is to correctly calculate a gasoline gallon equivalent (GGE) in accordance with federal standards, and hopefully do the same for liquefied natural gas as a diesel gallon equivalent (DGE) as well as the correct propane transportation fuel equivalency. In addition we recommend that the Connecticut Consumer Protection, Weights and Measures Office be added to the consultation list because of their fuel dispenser measurement inspection duties. There are three new alternative transportation fuels being dispensed, all with different physical characteristics, which complicate the tax determination process.

Thank you for the opportunity to provide this testimony to the Committee, and I encourage you to move forward with the proposed bill in front of you.

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Enclosure 1: US DOE Alternative Fuels Data Center-Fuel Properties Comparison
2: Letter from Graham Barker-Air & Gas Techologies

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April 19, 2013

Mr. Frank Antonacci
USA Recycle
Hartford, CT

Subject: State of CT Excise Tax on CNG

Dear Frank:

Further to our recent conversation at the Capitol Clean Cities Meeting, I reviewed the information contained in CT Agencies Regulations § 12-455a-1 and compared it to the information in my files from my dealings with the State of Connecticut Department of Consumer Protection Foods & Standards Division relative to Weights & Measures certification for CNG dispensers.

Based upon this review, it is clear that the values contained in section 12-455a-1(d) specifying equivalency are 100% incorrect, and I agree that you are being unfairly overtaxed. I am not sure where this information was obtained, but it does not match anything contained in any other legislation I am aware of. The CNG industry, US Internal Revenue Service (IRS), National Conference of Weights & Measures (NCWM) and National Institute of Standards & Technology (NIST) – which is actually referenced as a resource in the legislation – all base their Gasoline Gallon Equivalency (GGE) for CNG on an energy content equivalency, and performed research to back up the findings.

The IRS regulations use 126.67 cubic feet as an acceptable method of converting CNG to GGE units. The IRS conversion factor is based on the assumption that gasoline has roughly 114,000 Btu (rounded from 114,100 Btu lower heating value (LHV) and CNG has roughly 900 Btu LHV per cubic foot (rounded from 923.7 Btu).

At its 79th conference in 1994, NCWM adopted resolutions that:

> *All natural gas kept, offered or exposed for sale or sold at retail as a vehicle fuel shall be in terms of the gasoline liter equivalent (GLE) or gasoline gallon equivalent (GGE), and*
>
> *All retail natural gas dispensers shall be labeled with the conversion factor in terms of kilograms or pounds. The label shall be permanently and conspicuously displayed on the face of the dispenser and shall have either the statement "1 Gasoline Liter Equivalent (GLE) is equal to 0.678 lbs of Natural Gas" or "1 Gasoline Gallon Equivalent (GGE) is equal to 5.660 lbs of Natural Gas" according to the method of sale used.*

Similar statements to the above are also contained in NIST Handbook 130 and 44.

The NCWM resolution is based upon the assumption that gasoline contains 114,100 Btu LHV and CNG contains 923.7 Btu LHV per cubic foot. While not exactly equivalent, 126.67 cubic feet and 5.66 pounds of compressed natural gas are close enough to be used interchangeably without raising concerns of unfair treatment.

According to NGV America, the CNG industry trade association, 27 states (27) already tax CNG based on energy content.

As can be seen from the above, a great deal of research and thought went into the development of the official GGE; unfortunately, CT DRS do not appear to have spoken with any other state agencies or done any detailed investigation of national standards before issuing their document.

Using the CT DRS conversion factor contained in 12-455a-1(d) of 1 GGE = 82.62 cubic feet, and using the above nationally accepted calculations, a GGE according to CT DRS is 3.69 lbs of natural gas.

However, as the CNG dispensers are calibrated and DCP certified to 1 GGE being 5.66 lbs of natural gas, CT DRS is significantly overtaxing the fuel. Using the CT tax rate of 26¢ per GGE as a baseline, CT DRS is actually charging 39.8¢ per gallon, which is 53% higher than required.

Hopefully, the above can be brought to the attention of CT DRS, and they can correct their mathematical errors.

If you need any assistance explaining this issue to CT DRS I would be happy to assist, as the legislation as written is a detriment to the use of CNG as an alternate fuel; and this is totally opposite to the Governor's stance on actively promoting the use of alternate fuels in Connecticut. Perhaps this could be brought up to him and the other dignitaries at your ribbon cutting on May 1st.

Should you have any questions, please give me a call at the Connecticut office shown below.

Sincerely,

Graham Barker

Graham Barker
Business Development Manager

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Alternative Fuels Data Center – Fuel Properties Comparison

Chemical Structure	C_4 to C_{12}	C_8 to C_{25}	Methyl esters of C_{12} to C_{22} fatty acids	C_3H_8 (majority) and C_4H_{10} (minority)	CH_4 (83-99%), C_2H_6 (1-13%)	CH_4	CH_3CH_2OH	CH_3OH	H_2	N/A
Fuel Material (feedstocks)	Crude Oil	Crude Oil	Fats and oils from sources such as soy beans, waste cooking oil, animal fats, and rapeseed	A by-product of petroleum refining or natural gas processing	Underground reserves	Underground reserves	Corn, grains, or agricultural waste (cellulose)	Natural gas, coal, or, woody biomass	Natural gas, methanol, and electrolysis of water	Coal, nuclear, natural gas, hydroelectric, and small percentages of wind and solar
Gasoline Gallon Equivalent	100%	1 gallon of diesel has 113% of the energy of one gallon of gasoline.	B100 has 103% of the energy in one gallon of gasoline or 93% of the energy of one gallon of diesel. B20 has 109% of the energy of one gallon of gasoline or 99% of the energy of one gallon of diesel.	1 gallon of propane has 73% of the energy of one gallon of gasoline.	5.66 pounds or 126.67 cu. ft. of CNG has 100% of the energy of one gallon of gasoline. [1]	1 gallon of LNG has 64% of the energy of one gallon of gasoline.	1 gallon of E85 has 73% to 83% of the energy of one gallon gasoline (variation due to ethanol content in E85). 1 gallon of E10 has 96.7% if the energy of one gallon of gasoline. [2]	1 gallon of methanol has 49% of the energy of one gallon of gasoline.	1 kg or 2.198 lbs. of H_2 has 100% of the energy of one gallon of gasoline.	33.70 kWh has 100% of the energy of one gallon of gasoline.
Energy Content (Lower heating value)	116,090 Btu/gal (g)	128,450 Btu/gal (g)	119,550 Btu/gal for B100 (g)	84,950 Btu/gal (g)	20,268 Btu/lb (g) [1]	74,720 Btu/gal (g)	76,330 Btu/gal for E100 (g)	57,250 Btu/gal (g)	51,585 Btu/lb (g)	3,414 Btu/kWh

Alternative Fuels Data Center – Fuel Properties Comparison

Energy Content (Higher heating value)	124,340 Btu/gal (g)	137,380 Btu/gal (g)	127,960 Btu/gal for B100 (g)	91,410 Btu/gal (g)	22,453 Btu/lb (g) [1]	84,820 Btu/gal (g)	84,530 Btu/gal for E100 (g)	65,200 Btu/gal (g)	61,013 Btu/lb (g)	3,414 Btu/kWh
Physical State	Liquid	Liquid	Liquid	Pressurized Liquid	Compressed Gas	Cryogenic Liquid	Liquid	Liquid	Compressed Gas or Liquid	Electricity
Cetane Number	N/A	40-55 (a)	48-65 (a)	N/A	N/A	N/A	0-54 (b)	N/A	N/A	N/A
Pump Octane Number	84-93 (c)	N/A	N/A	105 (f)	120+ (d)	120+ (d)	110 (e)	112 (e)	130+ (f)	N/A
Flash Point	-45 °F (o)	165 °F (o)	212 to 338 °F (a)	-100 to -150 °F (o)	-300 °F (o)	-306 °F (p)	55 °F (o)	52 °F (o)	N/A	N/A
Autoignition Temperature	495 °F (o)	~600 °F (o)	~300 °F (a)	850 to 950 °F (o)	1,004 °F (o)	1,004 °F (p)	793 °F (o)	897 °F (o)	1,050 to 1,080 °F (o)	N/A
Maintenance Issues			Hoses and seals may be affected by higher-percent blend, Lubricity is improved over that of conventional diesel fuel.	Some fleets report service lives that are 2-3 years longer, as well as extended intervals between required maintenance.	High-pressure tanks require periodic inspection and certification.	High-pressure tanks require periodic inspection and certification.	Special lubricants may be required. Practices are very similar, if not identical, to those for conventionally fueled operations.	Special lubricants must be used as directed by the supplier and M-85-compatible replacement parts must be used.	When hydrogen is used in fuel cell applications, maintenance should be very minimal.	Service requirements are less than with gasoline or diesel. No tune-ups, oil changes, timing belts, water pumps, radiators, or fuel injectors are required. It is likely that the battery will need replacement before the vehicle is retired.

Alternative Fuels Data Center – Fuel Properties Comparison

Energy Security Impacts	Manufactured using oil, of which nearly 2/3 is imported (n).	Manufactured using oil, of which nearly 2/3 is imported (n).	Biodiesel is domestically produced, renewable, and reduces petroleum use 95% throughout its lifecycle (i).	Approximately half of the LPG in the U.S. is derived from oil, but no oil is imported specifically for LPG production.	CNG is domestically produced. The United States has vast natural gas reserves.	LNG is domestically produced.	Ethanol is produced domestically. E85 reduces lifecycle petroleum use by 70% and E10 reduces petroleum use by 6.3% (l).	Methanol is domestically produced, sometimes from renewable resources.	Hydrogen is produced domestically and can be produced from renewable sources.	Electricity is generated mainly through coal fired power plants. Coal is the United States' most plentiful and price-stable fossil energy resource.

Notes

[1] Due to the infinite temperature and pressure combinations of gaseous fuels and their effect on fuel density, ft^3 units are not given. Most of these fuels are dispensed by Coriolis flow meters, which track fuel mass and report fuel dispensed on a "gallon of gasoline-equivalent" (GGE) basis.

[2] E85 is a high-level gasoline-ethanol blend containing 51% to 83% ethanol, depending on geography and season. Ethanol content is lower in winter months in cold climates to ensure a vehicle starts. Based on composition, E85's lower heating value varies from 83,950 to 95,450 Btu/gal. This equates to 73% to 83% the heat content of gasoline.

Sources

(a) R.L. McCormick. Biodiesel Handling and Use Guidelines—Fourth Edition, National Renewable Energy Laboratory, 2009.

(b) American Petroleum Institute (API), Alcohols and Ethers, Publication No. 4261, 3rd ed. (Washington, DC, June 2001), Table 2.

(c) Petroleum Product Surveys: Motor Gasoline, Summer 1986, Winter 1986/1987. National Institute for Petroleum and Energy Research.

(d) K. Owen and T. Coley. 1995. Automotive Fuels Reference Book: Second Edition. Society of Automotive Engineers, Inc. Warrendale, PA.

(e) J. Heywood. 1988. Internal Combustion Engine Fundamentals. McGraw-Hill Inc. New York.

(f) American Petroleum Institute (API), Alcohols and Ethers, Publication No. 4261, 3rd ed. (Washington, DC, June 2001), Table B-1.

(g) Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation (GREET) Model, version 1.7. 2007. Input Fuel Specifications. Argonne National Laboratory. Chicago, IL.

(h) The National Biodiesel Board website reports that "most major engine companies have stated formally that the use of blends up to B20 will not void their parts and workmanship warranties." Accessed 11/15/12 at http://www.biodiesel.org/using-biodiesel/oem-information/oem-statement-summary-chart

(i) J. Sheehan, V. Camobreco, J. Duffield, M. Graboski, and H. Shapouri. 1998. An Overview of Biodiesel and Petroleum Diesel Life Cycles. Report of National Renewable Energy Laboratory (NREL) and US-Department of Energy (DOE).

(j) R.L. McCormick, A. Williams, J. Ireland, M. Brimhall, and R.R. Hayes. 2006. Effects of Biodiesel Blends on Vehicle Emissions. NREL Milestone Report NREL/MP-540-40554.

(k) K. Kelly, L. Eudy, and T. Coburn. 1999. Light-Duty Alternative Fuel Vehicles: Federal Test Procedure Emissions Results. Report of National Renewable Energy Laboratory (NREL), NREL/TP-540-25818.

(l) M. Wang. 2005. Energy and Greenhouse Gas Emissions Impacts of Fuel Ethanol. Presentation to the NGCA Renewable Fuels Forum, August 23, 2005. Argonne National Laboratory. Chicago, IL.

(m) J. Murray, Ben Lane, K. Lillie, and J. McCallum. 2000. An Assessment of the Emissions Performance of Alternative and Conventional Fuels. Report of the Alternative Fuels Group of the Cleaner Vehicles Task Force. Norwich, UK.

(n) Energy Information Administration. Monthly Energy Review. Summary for 2006.

(o) Methanol Institute. Fuel Properties. Accessed 11/14/2012 at http://www.methanol.org/Energy/Resources/Alternative-Fuel/Alt-Fuel-Properties.aspx

(p) Foss, Michelle. 2012. LNG Safety and Security. Bureau of Economic Geology, Jackson School of Geosciences. University of Texas at Austin.